



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,149	10/08/2003	Yanling Qi	LSI.79US01 (03-1026)	8199
24319	7590	10/15/2007	EXAMINER	
LSI CORPORATION			SEYE, ABDOU K	
1621 BARBER LANE			ART UNIT	
MS: D-106			PAPER NUMBER	
MILPITAS, CA 95035			2194	
			MAIL DATE	DELIVERY MODE
			10/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/682,149

Applicant(s)

QI ET AL.

Examiner

Abdou Karim Seye

Art Unit

2194

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 7, 8 and 10-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7, 8 and 10-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The request for continued examination and amendment filed on June 18, 2007 has been received and entered. The amendment amended Claims 7, 10-11, 14 and 17. The currently pending claims considered below are Claims 1-3, 7-8 and 10-17.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103 (a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 7-8 and 10-17 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Pooni et al. (US 20040225764) in view of Padmanabhan et al (US 20040107300).

As to Claims 1 and 7, Pooni teaches, a method and system of transmitting computer data between a host computer and at least one computer data storage device by inserting a multiple-path driver between driver-stack levels of an operating system operating on said host computer comprising:

selectively intercepting device commands from upper-level drivers of said operating system of said host computer (FIG. 1 and 5; paragraph 12-14);

replacing commands of the upper-level drivers and references to the upper-level function pointers within the operating system with commands and references to the multiple-path driver (FIG. 5; paragraph 65-67);

transmitting computer data along more than one physical path between said multiple-path driver and said computer data storage devices (FIG. 4; paragraph 50 and 63); and,

selectively presenting said computer data storage devices to said upper-level drivers of said operating system of said host computer as a single virtual computer data storage device (FIG. 5; paragraph 65-67; 71).

However, Pooni does not explicitly teach creating a virtual data path between said multiple-path driver and said computer data storage devices; and selectively directing device commands from said multiple-path driver to a virtual host bus adapter driver within said multiple-path driver along said virtual path.

Whereas, in the same field of endeavor, Padmanabhan discloses a virtual host controller interface with multipath input/output including data path and host bus adapter driver (FIG. 3; paragraph 40; 49-52; 65-77)

It would be obvious to one having ordinary skill in the art at the time the invention was made to modify Pooni's invention with Padmanabhan's invention by

Art Unit: 2194

providing a multipath input/output component including virtual data path and host bus adapter driver in order to support events of a failed path. One would have been motivated to combine these two reference because, it would provide a efficient way managing path failure by providing alternative paths to access a target storage device.

As to Claim 2, Pooni teaches the step of: utilizing at least one array of computer hard disks as said computer data storage devices (FIG. 4; paragraph 60).

As to Claim 3, Pooni teaches the step of : inserting a part of said multiple-path driver between middle-level device drivers of said operating system of said host computer and host bus adapter drivers of said operating system of said host computer; and, inserting an additional part of said multiple-path driver into said upper-level device drivers of said operating system of said host computer to interface with said middle-level device drivers of said operating system of said host computer (FIG. 5; paragraph 67-68).

As to claim 10, it is rejected for the same reasons as claim 3 above.

As to claim 11, Pooni teaches, wherein a portion of said multiple-path driver is inserted into said upper-level device drivers of said computer operating system of said computer to interface with said middle-level device drivers of said computer operating system of host computer (FIG. 3 and 4; paragraph 63-64).

As to claim 12, Pooni teaches, wherein said set of cables that connect said host bus adapters to said controllers of said computer data storage devices is electrical (FIG. 3 and 4).

As to claim 13, Pooni teaches, wherein said set of cables that connect said host bus adapters to said controllers of said computer data storage devices is fiber-channel (paragraph 58).

As to claim 14-16 and 17, they are rejected for the same reasons as the claims above.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

COX (US 20040064827) discloses a selection of a dispatch routine by a driver.

Pooni et al (US 20040064459) discloses a method and apparatus for generating persistent path identifiers.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Exr. Abdou Seye whose telephone number is (571) 270-

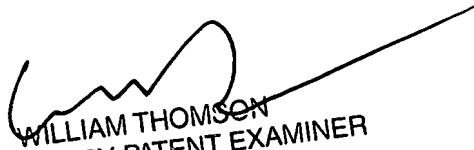
Art Unit: 2194

1062. The examiner can normally be reached Monday through Friday from 7:30 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, contact the examiner's supervisor, William Thomson at (571) 272-3718. The fax phone number for formal or official faxes to Technology Center 3600 is (571) 273-8300. Draft or informal faxes, which will not be entered in the application, may be submitted directly to the examiner at (571) 273-6722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group Receptionist whose telephone number is (571) 272-3600.

AKS
October 06, 2007


WILLIAM THOMSON
SUPERVISORY PATENT EXAMINER